

**MIRROR CONTROL OF MICRO-ELECTRO-MECHANICAL
OPTICAL CROSS CONNECT SWITCH**

ABSTRACT OF THE INVENTION

An optical switch includes an input optical fiber, an output optical fiber and a mirror that is either inclinable or rotatable or both and reflects a lightwave signal from the input optical fiber into the output optical fiber. The switch further includes a control circuit to sense a misalignment error and to adjust the mirror to correct the misalignment error. The misalignment error may be either an inclination misalignment error, a rotation misalignment error or both. In an alternative embodiment, an optical switch includes an input optical fiber that includes an input core and an input cladding, an output optical fiber that includes an output core and an output cladding, an input GRISM to insert a calibration signal into the input cladding and a mirror that is adjustable. The mirror reflects a lightwave signal from the input core into the output core and reflects the calibration signal from the input cladding into the output cladding. The optical switch further includes an output GRISM to extract the calibration signal from the output cladding and a control circuit to sense a misalignment error based on the extracted calibration signal. The misalignment error includes an inclination misalignment error or a rotation misalignment error or both. The control circuit includes circuitry to adjust the mirror to correct the misalignment error. In an alternative embodiment, an optical switch includes an input optical fiber, an output optical fiber and a rotatable mirror that has diffraction gratings etched thereon. The mirror reflects a lightwave signal from the input optical fiber into the output optical fiber. The optical switch further includes a control circuit to adjust a rotation angle of the mirror to select a wavelength that can be diffracted into the output optical fiber according to a spacing of the diffraction gratings.